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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,711	04/16/2001	Kia Silverbrook	360040-21	7729

7590 01/26/2005
Kia Silverbrook
393 Darling Street
Balmain, NSW, 2041
AUSTRALIA

EXAMINER

LIANG, LEONARD S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/835,711

Applicant(s)

SILVERBROOK, KIA

Examiner

Leonard S Liang

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 155-161 and 163-170 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 155-158, 160, 161, 163-168 and 170 is/are rejected.
7) ☒ Claim(s) 159 and 169 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 159 is objected to because of the following informalities: Claim 159 discloses, “power and ground interconnect means on a first side of the TAB film, the power and ground interconnect mean...” It will be construed that the claim should state “power and ground interconnect means on a first side of the TAB film, the power and ground interconnect means...”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

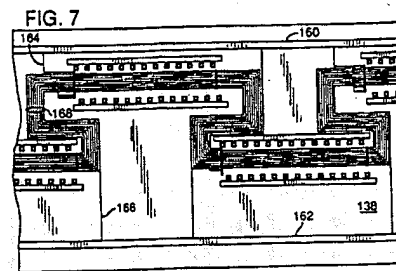
Claims 155-156, 160-161, 164-165, 167-168, and 170 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hackleman et al (US Pat 5600354) in view of Grande et al (US Pat 6037957).

Hackleman et al discloses:

- {claim 155} An inkjet printhead assembly (figure 1); a longitudinally extending inkjet printhead, including a plurality of longitudinally spaced apart power supply points and a plurality of longitudinally spaced apart ground supply points (figure 7, reference 164, 166, 168; column 8, line 58-column 9, line 10); at least one longitudinally extending power busbar (figure 7, reference 160); at least one

Art Unit: 2853

longitudinally extending ground busbar (figure 7, reference 162); interconnect means configured to connect a plurality of the power supply points to the at least one power busbar and a plurality of the ground supply points to the at least one ground busbar (figure 7, reference 160, 162, 164, 166, 168)



- {claim 156} wherein the busbars extend parallel to the inkjet printhead and the interconnect means extend generally transversely between the busbars and the respective power and ground supply points (figure 7, reference 160, 162, 164, 166, 168)
- {claim 160} wherein the interconnect means also includes a plurality of control lines configured to provide the inkjet printhead with control data from a print controller (abstract)
- {claim 161} wherein the interconnect means is in the form of one or more printed circuit boards connected directly to the busbars, with wire bonds connecting the printed circuit boards to the printhead (figure 7)
- {claim 164} wherein the inkjet printhead has a plurality of nozzle arrangements, each of which includes a thermal bend actuator device for ejection of ink from a corresponding nozzle (abstract)

Art Unit: 2853

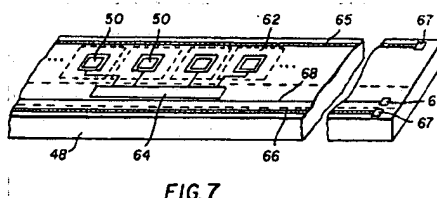
- {claim 165} including an associated ink supply unit for delivering ink to ink supply passages formed in the printhead (column 1, lines 13-37)
- {claim 167} wherein each of the busbars comprises a mechanically stiff conductive rail (figure 7, reference 160, 162)
- {claim 168} wherein the interconnect means includes a flexible portion that connects with the inkjet printhead (figure 7, reference 138)
- {claim 170} comprising at least two of the power supply points, wherein the inkjet printhead comprises at least two printhead chips, the inkjet printhead assembly being configured such that each of the at least two power supply points is supplied with power from a different one of the power supply points (figure 7, reference 164; additional power supply points drawn in)

Hackleman et al differs from the claimed invention in that it does not disclose:

- {claim 158} wherein the interconnect means is configured such that it need only be connected to the printhead along one edge thereof

Grande et al discloses:

- {claim 158} wherein the interconnect means is configured such that it need only be connected to the printhead along one edge thereof (figure 4, reference 65, 66; figure 7, reference 65-67; column 6, lines 24-36)



Art Unit: 2853

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Grande et al into the invention of Hackleman et al. The motivation for the skilled artisan in doing so is to gain the benefit of providing a large power supply system in a cost-effective, compact, and manufacturable manner that does not force compromise in system design (column 1, lines 60-63). There is also the benefit of reducing the number of electrical conductors (column 6, lines 34-36).

Claims 157-158 and 166 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hackleman et al (US Pat 5600354) in view of Grande et al (US Pat 6037957), as applied to claims 155-156, 160-161, 164-165, 167-168, and 170 above, and further in view of Childers (US Pat 5471163).

Hackleman et al, as modified, discloses:

- {claim 166} the ink supply unit including: a slot for insertion of the printhead; and a series of elongated chambers for the storage of separate color inks, the chambers being interconnected with the slot for the supply of ink to the printhead (figure 1, reference 10, 12, 14, 16, 18, 20); wherein the busbars are disposed along the ink supply unit (figure 7, reference 160, 162)

Hackleman et al, as modified, differs from the claimed invention in that it does not disclose:

- {claim 157} the interconnection means includes at least one tape automated bonded film

Art Unit: 2853

- {claim 158} wherein the TAB film electrically connects with the busbars by means of correspondingly sized noble metal deposited strips formed on the TAB film
- {claim 166} the interconnect means take the form of a tape automated bonding strip similarly disposed along an outside of the ink supply unit, the TAB strip including a series of control lines along one surface thereof for mating with a corresponding external series of control lines for receiving control signals from a print controller, the TAB strip further having a repeating series of interconnects to the inkjet printhead, the interconnects interconnecting the control lines and the busbars to the printhead

Childers discloses:

- {claim 157} the interconnection means includes at least one tape automated bonded film (column 2, lines 1-8; column 5, lines 32-43)
- {claim 158} wherein the TAB film electrically connects with the busbars by means of correspondingly sized noble metal deposited strips formed on the TAB film (column 2, lines 41-56)
- {claim 166} the interconnect means take the form of a tape automated bonding strip similarly disposed along an outside of the ink supply unit, the TAB strip including a series of control lines along one surface thereof for mating with a corresponding external series of control lines for receiving control signals from a print controller, the TAB strip further having a repeating series of interconnects

Art Unit: 2853

to the inkjet printhead, the interconnects interconnecting the control lines and the busbars to the printhead (column 2, lines 1-8; column 5, lines 32-43)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the flexible circuit of Hackleman with the TAB circuit of Childers. The motivation for the skilled artisan in doing so is to gain the benefit of enabling encoding of machine readable information on the flexible tab circuit (column 2, lines 1-9).

Claim 163 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hackleman et al (US Pat 5600354) in view of Grande et al (US Pat 6037957), as applied to claims 155-156, 160-161, 164-165, 167-168, and 170 above, and further in view of White et al (US Pat 5494698).

Hackleman et al, as modified, teaches all limitations of the claimed invention except for the following:

- {claim 163} wherein the inkjet printhead is in the form of a plurality of printhead chips manufactured by a MEMS processing technique

White et al discloses:

- {claim 163} wherein the inkjet printhead is in the form of a plurality of printhead chips manufactured by a MEMS processing technique (column 2, lines 25-29)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of White et al into the invention of modified Hackleman. The motivation for the skilled artisan in doing so is to gain the benefit of reducing scarring and chipping (column 2, lines 25-29).

Allowable Subject Matter

Claims 159 and 169 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 159 discloses “wherein the at least one TAB film is double-sided and includes: power and ground interconnect means on a first side of the TAB film, the power and ground interconnect means connecting said busbars and their corresponding power and ground supply points; and control line interconnect means on the other side of the TAB film, the control line interconnect means being configured to provide the inkjet printhead with control data from a print controller,” which was not found, taught, or disclosed in the prior arts.

Claim 169 discloses “wherein said ink supply unit includes a series of positioning protuberances for accurately locating the power supply busbars and/or interconnect means therewith,” which was not found, taught, or disclosed in the prior arts.

Response to Arguments

Applicant's arguments filed 10/26/04 have been fully considered but they are not persuasive. The crux of the applicant's argument is that Grande et al cannot be combined with Hackleman et al because Grande et al does not disclose interconnect means configured such that it need only be connected to the printhead along one edge thereof. The applicant cites that “like the contact pads 154 of Hackleman, the solder bumps 54 of Grande are not positioned along one edge of the print head, but are positioned along both edges of the print head for interconnection with the integrated circuit package 58 containing the drive circuitry for the transfer electrodes.”

Art Unit: 2853

To help simplify matters of contention, the examiner has also cited figure 7, which provides better evidence that Grande et al discloses a power busbar (figure 7, reference 66), a ground busbar (figure 7, reference 65), and a interconnect means connected along one edge of the printhead (figure 7, reference 67). Thus, it should be clear that Grande et al provides what Hackleman lacks and combination is proper given that both pieces of art are in the same field of providing electrical power for printing mechanisms.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

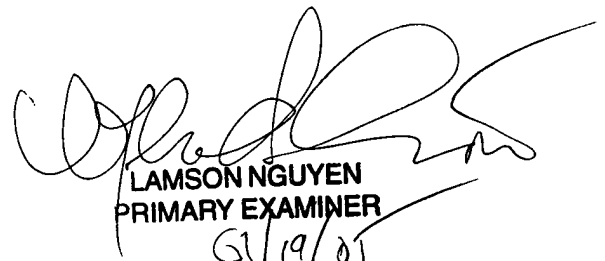
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

Art Unit: 2853

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lsl LSL


LAMSON NGUYEN
PRIMARY EXAMINER
6/19/05